[0025] The rotor may include a plurality of notches formed on an outer circumferential surface thereof.

[0026] The notches may be disposed between any one of the plurality of permanent magnet parts and another permanent magnet part which is adjacent to any one permanent magnet part.

[0027] The notches may have a V or U shape.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The above and/or other aspects of the present disclosure will be more apparent by describing certain exemplary embodiments of the present disclosure with reference to the accompanying drawings, in which:

[0029] FIG. **1** is a cross-sectional view of a BLDC motor taken along a vertical direction of a rotation shaft, according to an exemplary embodiment of the present disclosure;

[0030] FIG. **2** is an enlarged cross-sectional view of a rotor illustrated in FIG. **1**;

[0031] FIG. **3** is an enlarged view indicating lines of magnetic force formed at the rotor and a stator illustrated in FIG. **1**;

[0032] FIG. **4** is a graph comparing counter electromotive forces according to the present disclosure and the related art;

[0033] FIG. **5** is a graph comparing torques according to the present disclosure and the related art;

[0034] FIG. **6** is an enlarged view of the rotor which further includes a barrier hole and notch in FIG. **2**; and

[0035] FIGS. **7**A and **7**B are cross-sectional views of a rotor in which 8 and 10 permanent magnet parts are included, according to another exemplary embodiment of the present disclosure.

DETAILED DESCRIPTION

[0036] The present disclosure will become apparent by describing exemplary embodiments of the present disclosure in detail with reference to the accompanying drawings. For reference, when it is determined that the detailed description of the known function or configuration related to the present disclosure may obscure the gist of the present disclosure in describing the present disclosure, the detailed description thereof will be omitted.

[0037] A rotor of a BLDC motor according to an exemplary embodiment of the present disclosure includes a plurality of permanent magnet parts. However, hereinafter, a case in which **6** permanent magnet parts are sequentially disposed along a cylindrical surface inside of the rotor while having polarity opposite to polarity of an adjacent permanent magnet part will be described by way of example.

[0038] FIG. **1** is a cross-sectional view of a BLDC motor **1** taken along a vertical direction of a rotation shaft, according to an exemplary embodiment of the present disclosure.

[0039] The BLDC motor **1** includes a rotor **100** rotating about a rotation shaft **101**, and a stator **200**.

[0040] The stator **200**, which is a magnetic body such as iron, is formed in a cylindrical shape, and has a circular hole formed therein, wherein the rotor **100** is rotatably disposed in the circular hole. The stator **200** includes a plurality of teeth **210** which are formed radially toward the center of the stator, and slots **220** are formed between the plurality of teeth **210**.

[0041] In addition, the plurality of teeth **210** are connected to each other by a yoke part **211**, and a coil **230** is wound around the plurality of teeth **210**. Therefore, when a current is applied to the coil **230**, the plurality of teeth **210** are magnetized, thereby applying attraction force or repulsion force to the permanent magnet parts **110** inside of the rotor **100**.

[0042] In the case in which the current is sequentially applied to the coil **230** which is wound around the plurality of teeth **210** having a constant interval as described above, a rotational magnetic field occurs when polarity of each of the teeth **210** is sequentially changed, and a magnetic field by the permanent magnet part **110** is formed in the rotor **100** in which the permanent magnet part **110** opposite to each of the teeth **210** is buried.

[0043] Since the formation of the rotational magnetic field by the stator **200** as described above is the same as or similar to that used for the BLCD motor according to the related art, a detailed description thereof will be omitted.

[0044] A structure of the rotor **100** will be described below in detail with reference to FIGS. **2** and **3**.

[0045] FIG. **2** is an enlarged cross-sectional view of the rotor **100** illustrated in FIG. **1** and FIG. **3** is an enlarged view indicating lines of magnetic force formed at the rotor and a stator illustrated in FIG. **1**.

[0046] The rotor **100**, which is formed of metal, is formed in a cylindrical shape in which an outer circumferential surface **102** thereof corresponds to an inner circumferential surface of the stator **200**, and the rotor **100** is concentric with an inner diameter of the stator **200** so as to be rotatable inside of the stator **200**.

[0047] In addition, the rotation shaft **101** is coupled to the center of the rotor **100** to penetrate therethrough. Thereby, the rotor **100** is rotated together with the rotation shaft **101**.

[0048] The plurality of permanent magnet parts **110** which are inserted along a shaft direction of the rotor **100** may be included inside of the rotor **100**.

[0049] The plurality of permanent magnet parts **110** are disposed along the cylindrical surface of the rotor **100**, and the permanent magnet parts which are adjacent to each other are disposed to have different polarities.

[0050] According to an exemplary embodiment of the present disclosure, **6** permanent magnet parts **110** may be included as illustrated in FIG. **2**. However, as illustrated in FIGS. **7**A and **7**B, **8** permanent magnet parts **110** (FIG. **7**A), **10** permanent magnet parts **110** (FIG. **7**B), or more may also be included.

[0051] The respective permanent magnet parts **110** include a first permanent magnet **111** and a second permanent magnet **112** which are disposed while having an interval therebetween, and the first permanent magnet **111** and the second permanent magnet **112** have the same polarity.

[0052] The rotor **100** includes a slot part **120** into which the permanent magnet part **110** may be inserted.

[0053] The slot part **120** includes a first portion **121** into which the first permanent magnet **111** is inserted, and a second portion **122** into which the second permanent magnet **112** is inserted.

[0054] In addition, one end portions of the first portion **121** and the second portion **122** are spaced apart from each other by a first distance D**1**, and the other end portions thereof are spaced apart from each other by a second distance D**2**.

[0055] Therefore, one end portion **111***a* of the first permanent magnet **111** and one end portion **112***a* of the second permanent magnet **112** which are inserted into the first and second portions **121** and **122**, respectively, are spaced apart from each other by the first distance D**1**, and the other end